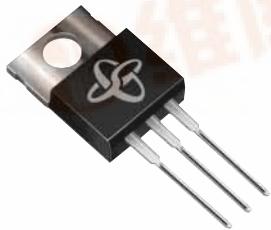




GFP70N03

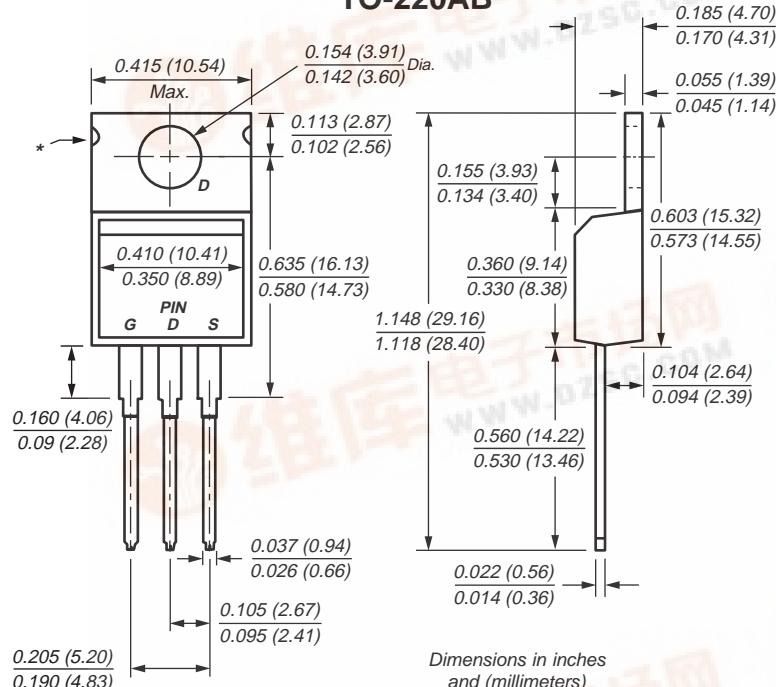


N-Channel Enhancement-Mode MOSFET

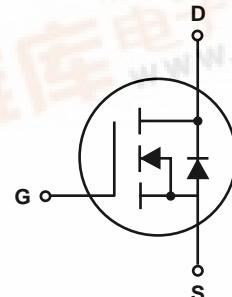
V_{DS} 30V R_{DSON} 8mΩ I_D 70A

TRENCH
GENFET®

TO-220AB



* May be notched or flat



Features

- Advanced Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Specially Designed for Low Voltage DC/DC Converters
- Fast Switching for High Efficiency

Mechanical Data

Case: JEDEC TO-220AB molded plastic body

Terminals: Leads solderable per MIL-STD-750, Method 2026

High temperature soldering guaranteed:
250°C/10 seconds, 0.17" (4.3mm) from case

Mounting Torque: 10 in-lbs maximum

Weight: 2.0g

Maximum Ratings and Thermal Characteristics (T_C = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GSS}	±20	
Continuous Drain Current ⁽¹⁾	I _D	70	A
Pulsed Drain Current	I _{DM}	200	
Maximum Power Dissipation	P _D	62.5 25	W
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C
Lead Temperature (1/8" from case for 5 sec.)	T _L	275	°C
Junction-to-Case Thermal Resistance	R _{θJC}	2.0	°C/W
Junction-to-Ambient Thermal Resistance	R _{θJA}	62.5	°C/W

Notes: (1) Maximum DC current limited by the package

N-Channel Enhancement-Mode MOSFET

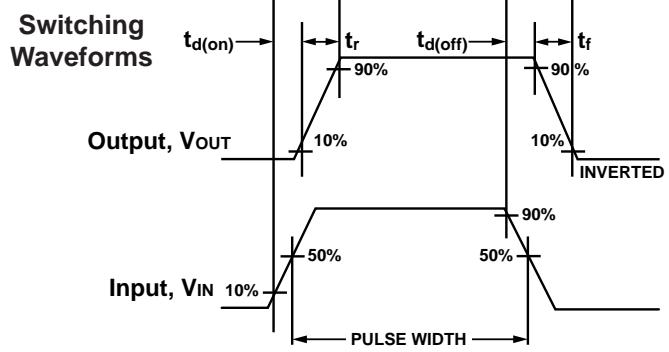
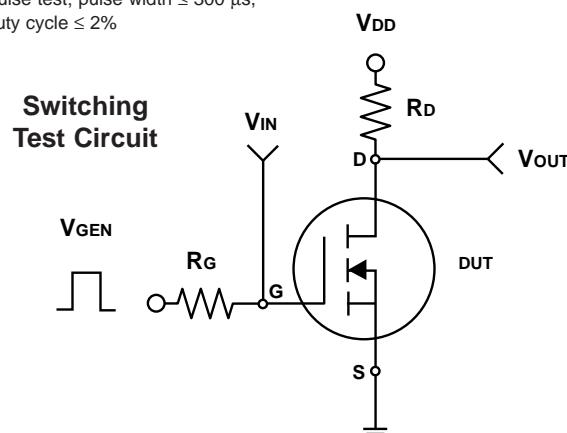
Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$\text{V}_{\text{GS}} = 0\text{V}, \text{I}_D = 250\mu\text{A}$	30	—	—	V
Gate Threshold Voltage	$\text{V}_{\text{GS(th)}}$	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}, \text{I}_D = 250\mu\text{A}$	1.0	—	3.0	V
Gate-Body Leakage	I_{GSS}	$\text{V}_{\text{DS}} = 0\text{V}, \text{V}_{\text{GS}} = \pm 20\text{V}$	—	—	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$\text{V}_{\text{DS}} = 30\text{V}, \text{V}_{\text{GS}} = 0\text{V}$	—	—	1	μA
On-State Drain Current ⁽²⁾	$\text{I}_{\text{D(on)}}$	$\text{V}_{\text{DS}} \geq 5\text{V}, \text{V}_{\text{GS}} = 10\text{V}$	70	—	—	A
Drain-Source On-State Resistance ⁽²⁾	$\text{R}_{\text{DS(on)}}$	$\text{V}_{\text{GS}} = 10\text{V}, \text{I}_D = 35\text{A}$	—	6	8	$\text{m}\Omega$
		$\text{V}_{\text{GS}} = 4.5\text{V}, \text{I}_D = 30\text{A}$	—	9	11	
Forward Transconductance ⁽²⁾	g_{fs}	$\text{V}_{\text{DS}} = 15\text{V}, \text{I}_D = 35\text{A}$	—	61	—	S
Dynamic						
Total Gate Charge	Q_g	$\text{V}_{\text{DS}} = 15\text{V}, \text{V}_{\text{GS}} = 5\text{V}, \text{I}_D = 35\text{A}$	—	34	48	nC
Gate-Source Charge	Q_{gs}	$\text{V}_{\text{DS}} = 15\text{V}, \text{V}_{\text{GS}} = 10\text{V}$ $\text{I}_D = 35\text{A}$	—	63	95	
Gate-Drain Charge	Q_{gd}		—	11	—	
Turn-On Delay Time	$\text{t}_{\text{d(on)}}$		—	9	14	
Rise Time	t_r	$\text{V}_{\text{DD}} = 15\text{V}, \text{R}_L = 15\Omega$ $\text{I}_D \approx 1\text{A}, \text{V}_{\text{GEN}} = 10\text{V}$ $\text{R}_G = 6\Omega$	—	9	14	ns
Turn-Off Delay Time	$\text{t}_{\text{d(off)}}$		—	100	167	
Fall Time	t_f		—	31	62	
Input Capacitance	C_{iss}		—	3400	—	pF
Output Capacitance	C_{oss}	$\text{V}_{\text{GS}} = 0\text{V}$ $\text{V}_{\text{DS}} = 15\text{V}$	—	618	—	
Reverse Transfer Capacitance	C_{rss}		—	300	—	
Source-Drain Diode						
Max Diode Forward Current	I_s	—	—	—	35	A
Diode Forward Voltage ⁽²⁾	V_{SD}	$\text{I}_s = 35\text{A}, \text{V}_{\text{GS}} = 0\text{V}$	—	0.9	1.3	V

Notes:

(1) Maximum DC current limited by the package

(2) Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$,
duty cycle $\leq 2\%$



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Output Characteristics

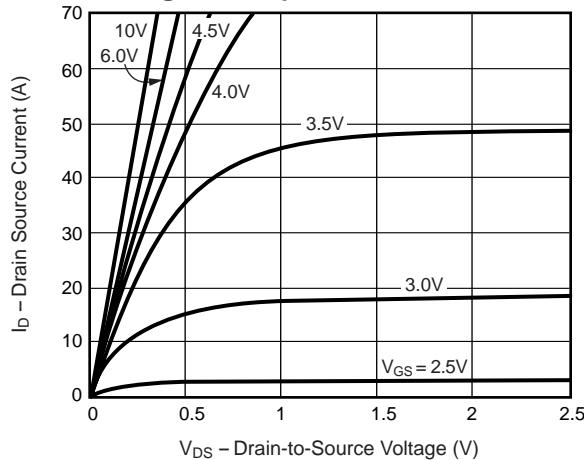


Fig. 2 – Transfer Characteristics

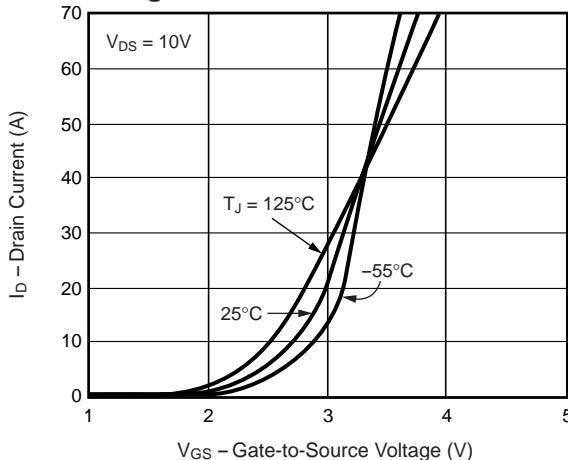


Fig. 3 – Threshold Voltage vs. Temperature

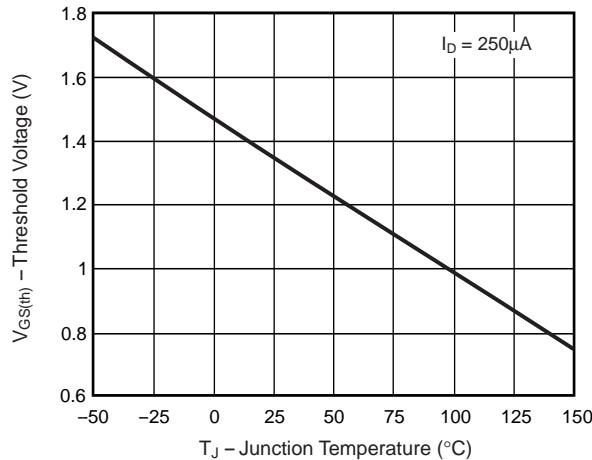


Fig. 4 – On-Resistance vs. Drain Current

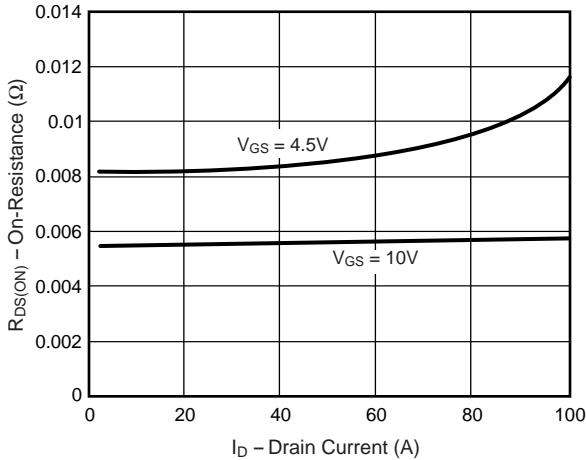
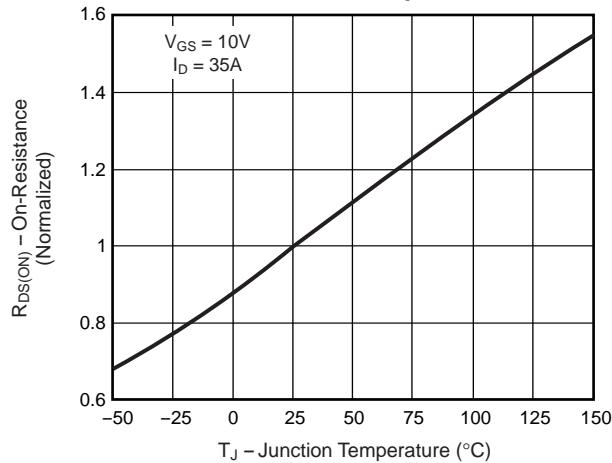


Fig. 5 – On-Resistance vs. Junction Temperature



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves

($T_A = 25^\circ\text{C}$ unless otherwise noted)

**Fig. 6 – On-Resistance
vs. Gate-to-Source Voltage**

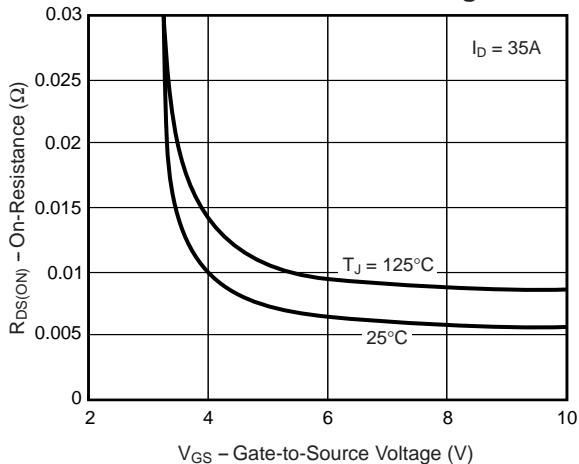


Fig. 7 – Gate Charge

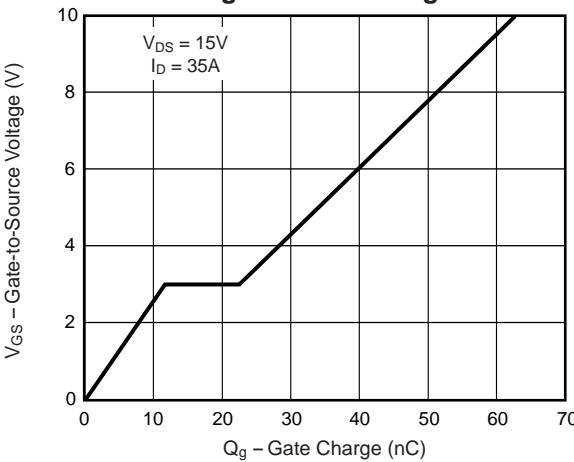


Fig. 8 – Capacitance

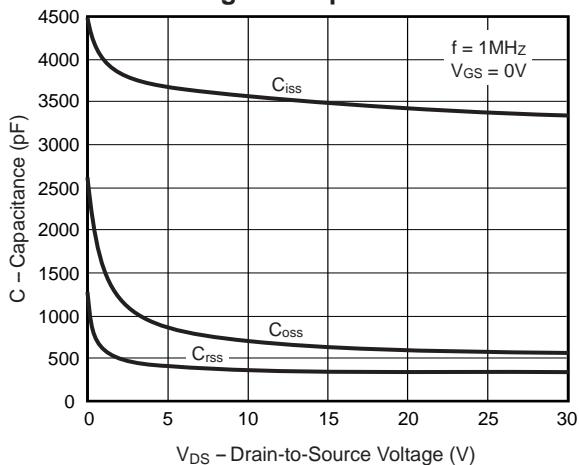
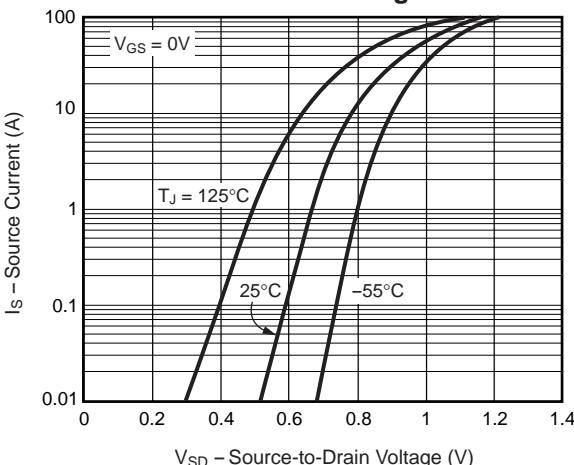


Fig. 9 – Source-Drain Diode Forward Voltage



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

**Fig. 10 – Breakdown Voltage
vs. Junction Temperature**

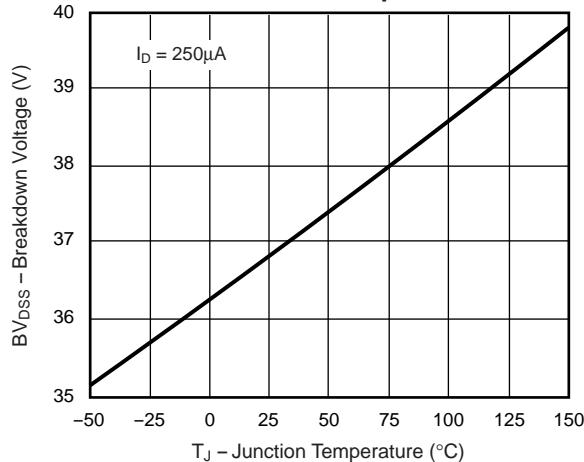


Fig. 11 – Thermal Impedance

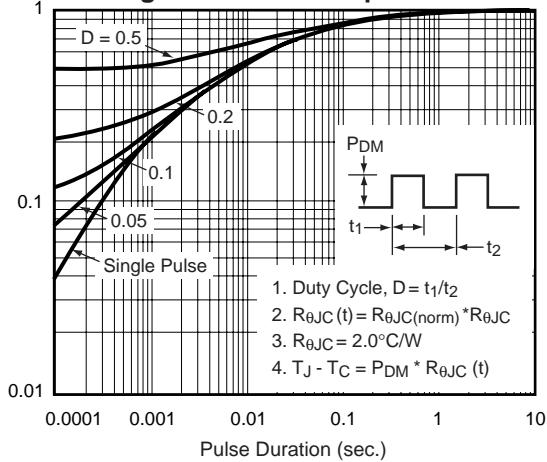


Fig. 12 – Power vs. Pulse Duration

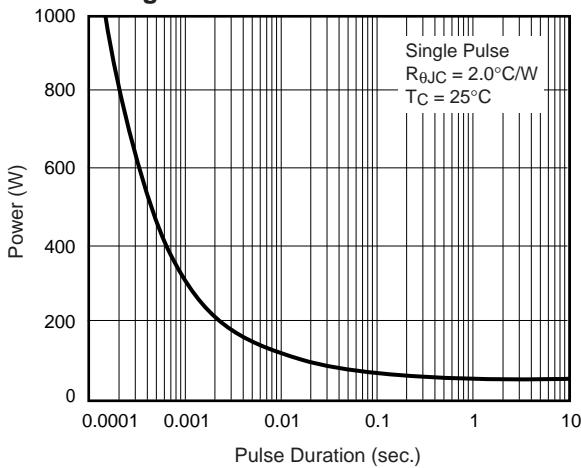


Fig. 13 – Maximum Safe Operating Area

